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Subchapter 5. Electrical Safety Orders
Group 1. Low-Voltage Electrical Safety Orders
Article 1. Definitions

Amend Section 2300 to read:

§2300. ~~Scope~~ Definitions.

(a) Only definitions of terms peculiar to and essential to the proper use of this Safety Order are included. In general, only those terms used in two or more Articles are defined in Article 1. Other definitions are included in the Article in which they are used but may be referenced in Article 1.

(b) Definitions.

*****

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

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Subchapter 5. Electrical Safety Orders
Group 1. Low-Voltage Electrical Safety Orders
Article 2. Administration

Amend Section 2305.2 to read:

§2305.2. Scope and Application.

(a) These Low-Voltage Electrical Safety Orders apply to all electrical installations and electrical equipment operating or intended to operate on systems of 600 volts, nominal, or less and to all work performed directly on or in proximity to such electrical installations, equipment or systems in all places of employment in the State of California as defined in Labor Code Section 6303.

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NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

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Subchapter 5. Electrical Safety Orders
Group 2. High-Voltage Electrical Safety Orders
Article 36. Work Procedures and Operating Procedures

Amend Section 2940.2 to read:

§2940.2. Minimum Approach Distances.

*****

(d) Working Position.
(1) When performing work with live line tools, minimum approach distances in accordance with subsection (a) shall be maintained. Conductor support tools, such as link sticks, strain carriers, and insulator cradles, shall be permitted to be used provided that the clear insulation is at least as long as the insulator string or the minimum approach distance specified in subsection (a).

Table 2940.2-1 AC Live-Line Work Minimum Approach Distance	
The minimum approach distance (MAD; in meters) shall conform to the following equations.	
For phase-to-phase system voltages of 601V to 5 kV: [1]	
MAD = *M* + *D*, where	
D = 0.02 m	D is the electrical component of the minimum approach distance
M = 0.31 m for voltages up to 750V and 0.61 m otherwise	M is the inadvertent movement factor
For phase-to-phase system voltages of 5.1 kV to 72.5 kV: [1, 4]	
MAD = *M* + *AD*, where	
M = 0.61 m	M is the inadvertent movement factor
A = the applicable value from 2940.2-7	A is the altitude correction factor
D = the value from 2940.2-2 corresponding to the voltage and exposure or the value of the electrical component of	D is the electrical component of the minimum approach distance

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the minimum approach distance calculated using the method provided in Appendix A to this article					
For phase-to-phase system voltages of more than 72.5 kV, nominal: [2,4]					
$MAD = 0.3048(C+a)V_{L-G}TA+M$, where					
C =	0.01 for phase-to-ground exposures that the employer can demonstrate consist only of air across the approach distance (gap), 0.01 for phase-to-phase exposures if the employer can demonstrate that no insulated tool spans the gap and the no large conductive object is in the gap, or 0.011 otherwise				
V_{L-G} =	phase-to-ground rms voltage, in kV				
T =	maximum anticipated per-unit transient overvoltage; for phase-to-ground exposures, T equals T_{L-G}, the maximum per-unit transient overvoltage, phase-to-ground, determined by the employer under subsection (a)(1)(A) of this section; for phase-to-phase exposures, T equals $1.35T_{L-G}+0.45$				
A =	altitude correction factor from 2940.2-7				
M =	0.31 m, the inadvertent movement factor				
a =	saturation factor, as follows:				
Phase-to-Ground Exposure					
$V_{Peak} = T_{L-G}V_{L-G}\sqrt{2}$	635 kV or less	635.1 to 915 kV	915.1 to 1,050 kV	More than 1,050 kV	
~~A~~<u>a</u>	0	(V_{Peak}-635)/140,000	(V_{Peak}-645)/135,000	(V_{Peak}-675)/125,000	
Phase-to-~~Ground~~<u>Phase</u> Exposure[3]					
V_{Peak}=(1.35T_{L-G}+0.45)$V_{L-g}\sqrt{2}$	630 kV or less	630.1 to 848 kV	848.1 to 1,131 kV	1,131.1 to 1,485 kV	More than 1,485 kV

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~~A~~*a*	0	(V_{Peak}-630)/155,000	(V_{Peak}-633.6)/152,207	(V_{Peak}-628)/153,846	*(V_{Peak} - 350.5/ 203,666*

*****

[2] Employers may use the minimum approach distances in Table 2940.2-4 except that the employer may not use the minimum approach distances in Table 2940.2-4 for phase-to-phase exposures if an insulated tool spans the gap or if any large conductive object is in the gap. If the worksite is at an elevation of more than 900 meters (3,000 feet), see footnote 1 to Table 2940.2-4. Employers may use the minimum approach distance in ~~Table 14 through Table 21~~ Table 6 through Table 13 in Appendix A to this article, which calculated MAD for various values of T, provided the employer follows the notes to those tables.

*****

~~[4] Until October 1, 2018, employees may use the minimum approach distances in Table 6 in Appendix A of this Article.~~

*****

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

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Subchapter 5. Electrical Safety Orders
Group 2. High-Voltage Electrical Safety Orders
Article 36. Work Procedures and Operating Procedures

Amend Appendix A to read:

Appendix A

WORKING ON EXPOSED ENERGIZED PARTS

*****

V. Minimum Approach – Distance Tables

~~A. Legacy Tables. Employers may use the minimum approach distances in Table 6 through 13 until October 1, 2018.~~

~~TABLE 6 MINIMUM APPROACH DISTANCES UNTIL OCTOBER 1, 2018~~

~~Voltage range phase to phase (kV)~~	~~Phase-to-ground exposure~~		~~Phase-to-phase exposure~~	
	~~m~~	~~ft~~	~~m~~	~~ft~~
~~0.05 to 1.0~~	~~Avoid Contact~~		~~Avoid Contact~~	
~~1.1 to 15.0~~	~~0.64~~	~~2.10~~	~~0.66~~	~~2.20~~
~~15.1 to 36.0~~	~~0.72~~	~~2.30~~	~~0.77~~	~~2.60~~
~~36.1 to 46.0~~	~~0.77~~	~~2.60~~	~~0.85~~	~~2.80~~
~~46.1 to 72.5~~	~~0.90~~	~~3.00~~	~~1.05~~	~~3.50~~
~~72.6 to 121~~	~~0.95~~	~~3.20~~	~~1.29~~	~~4.30~~
~~138 to 145~~	~~1.09~~	~~3.60~~	~~1.50~~	~~4.90~~
~~161 to 169~~	~~1.22~~	~~4.00~~	~~1.71~~	~~5.70~~
~~230 to 242~~	~~1.59~~	~~5.30~~	~~2.27~~	~~7.50~~
~~345 to 362~~	~~2.59~~	~~8.50~~	~~3.80~~	~~12.50~~
~~500 to 550~~	~~3.42~~	~~11.30~~	~~5.50~~	~~18.10~~
~~765 to 800~~	~~4.53~~	~~14.90~~	~~7.91~~	~~26.00~~

~~**Note:** The clear live-line tool distance must equal or exceed the values for the indicated voltage ranges.~~

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~~TABLE 7 MINIMUM APPROACH DISTANCES UNTIL OCTOBER 1, 2018, 72.6 TO 121.0 kV WITH OVERVOLTAGE FACTOR~~

~~T (p.u.)~~	~~Phase-to-ground exposure~~		~~Phase-to-phase exposure~~	
	~~m~~	~~ft~~	~~m~~	~~ft~~
~~2.0~~	~~0.74~~	~~2.42~~	~~1.09~~	~~3.58~~
~~2.1~~	~~0.76~~	~~2.50~~	~~1.09~~	~~3.58~~
~~2.2~~	~~0.79~~	~~2.58~~	~~1.12~~	~~3.67~~
~~2.3~~	~~0.81~~	~~2.67~~	~~1.14~~	~~3.75~~
~~2.4~~	~~0.84~~	~~2.75~~	~~1.17~~	~~3.83~~
~~2.5.~~	~~0.84~~	~~2.75~~	~~1.19~~	~~3.92~~
~~2.6~~	~~0.86~~	~~2.83~~	~~1.22~~	~~4.00~~
~~2.7~~	~~0.89~~	~~2.92~~	~~1.24~~	~~4.08~~
~~2.8~~	~~0.91~~	~~3.00~~	~~1.24~~	~~4.08~~
~~2.9~~	~~0.94~~	~~3.08~~	~~1.27~~	~~4.17~~
~~3.0~~	~~0.97~~	~~3.17~~	~~1.30~~	~~4.25~~

~~**Note 1:** The employer may apply the distance specified in this table only where the employer determines the maximum anticipated per-unit transient overvoltage by engineering analysis. (Table 6 applies otherwise.)~~

~~**Note 2:** The distances specified in this table are the air, bare-hand, and live-line tool distances.~~

~~TABLE 8 MINIMUM APPROACH DISTANCES UNTIL OCTOBER 1, 2018, 121.1 TO 145.0 kV WITH OVERVOLTAGE FACTOR~~

~~T (p.u.)~~	~~Phase-to-ground exposure~~		~~Phase-to-ground exposure~~	
	~~m~~	~~ft~~	~~m~~	~~ft~~
~~2.0~~	~~0.84~~	~~2.75~~	~~1.24~~	~~4.08~~
~~2.1~~	~~0.86~~	~~2.83~~	~~1.27~~	~~4.17~~
~~2.2~~	~~0.89~~	~~2.92~~	~~1.30~~	~~4.25~~
~~2.3~~	~~0.91~~	~~3.00~~	~~1.32~~	~~4.33~~
~~2.4~~	~~0.94~~	~~3.08~~	~~1.35~~	~~4.42~~
~~2.5~~	~~0.97~~	~~3.17~~	~~1.37~~	~~4.50~~
~~2.6~~	~~0.99~~	~~3.25~~	~~1.40~~	~~4.58~~
~~2.7~~	~~1.02~~	~~3.33~~	~~1.42~~	~~4.67~~
~~2.8~~	~~1.04~~	~~3.42~~	~~1.45~~	~~4.75~~

~~2.9~~	~~1.07~~	~~3.50~~	~~1.47~~	~~4.83~~
~~3.0~~	~~1.09~~	~~3.58~~	~~1.50~~	~~4.92~~

~~**Note 1:** The employer may apply the distance specified in this table only where the employer determines the maximum anticipated per-unit transient overvoltage by engineering analysis. (Table 6 applies otherwise.)~~

~~**Note 2:** The distances specified in this table are the air, bare-hand, and live-line tool distances.~~

~~TABLE 9 MINIMUM APPROACH DISTANCES UNTIL OCTOBER 1, 2018, 145.1 TO 169.0 kV WITH OVERVOLTAGE FACTOR~~

~~T (p.u.)~~	~~Phase-to-ground exposure~~		~~Phase-to-phase exposure~~	
	~~m~~	~~ft~~	~~m~~	~~ft~~
~~2.0~~	~~0.91~~	~~3.00~~	~~1.42~~	~~4.67~~
~~2.1~~	~~0.97~~	~~3.17~~	~~1.45~~	~~4.75~~
~~2.2~~	~~0.99~~	~~3.25~~	~~1.47~~	~~4.83~~
~~2.3~~	~~1.02~~	~~3.33~~	~~1.50~~	~~4.92~~
~~2.4~~	~~1.04~~	~~3.42~~	~~1.52~~	~~5.00~~
~~2.5~~	~~1.07~~	~~3.50~~	~~1.57~~	~~5.17~~
~~2.6~~	~~1.12~~	~~3.67~~	~~1.60~~	~~5.25~~
~~2.7~~	~~1.14~~	~~3.75~~	~~1.63~~	~~5.33~~
~~2.8~~	~~1.17~~	~~3.83~~	~~1.65~~	~~5.42~~
~~2.9~~	~~1.19~~	~~3.92~~	~~1.68~~	~~5.50~~
~~3.0~~	~~1.22~~	~~4.00~~	~~1.73~~	~~5.67~~

~~**Note 1:** The employer may apply the distance specified in this table only where the employer determines the maximum anticipated per-unit transient overvoltage by engineering analysis. (Table 6 applies otherwise.)~~

~~**Note 2:** The distances specified in this table are the air, bare-hand, and live-line tool distances.~~

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~~TABLE 10-MINIMUM APPROACH DISTANCES UNTIL OCTOBER 1, 2018, 169.1 TO 242.0 kV WITH OVERVOLTAGE FACTOR~~

~~T (p.u.)~~	~~Phase-to-ground exposure~~		~~Phase-to-ground exposure~~	
	~~m~~	~~ft~~	~~m~~	~~ft~~
~~2.0~~	~~1.17~~	~~3.83~~	~~1.85~~	~~6.08~~
~~2.1~~	~~1.22~~	~~4.00~~	~~1.91~~	~~6.25~~
~~2.2~~	~~1.24~~	~~4.08~~	~~1.93~~	~~6.33~~
~~2.3~~	~~1.30~~	~~4.25~~	~~1.98~~	~~6.50~~
~~2.4~~	~~1.35~~	~~4.42~~	~~2.01~~	~~6.58~~
~~2.5~~	~~1.37~~	~~4.50~~	~~2.06~~	~~6.75~~
~~2.6~~	~~1.42~~	~~4.67~~	~~2.11~~	~~6.92~~
~~2.7~~	~~1.47~~	~~4.83~~	~~2.13~~	~~7.00~~
~~2.8~~	~~1.50~~	~~4.92~~	~~2.18~~	~~7.17~~
~~2.9~~	~~1.55~~	~~5.08~~	~~2.24~~	~~7.33~~
~~3.0~~	~~1.60~~	~~5.25~~	~~2.29~~	~~7.50~~

~~**Note 1:** The employer may apply the distance specified in this table only where the employer determines the maximum anticipated per-unit transient overvoltage by engineering analysis. (Table 6 applies otherwise.)~~

~~**Note 2:** The distances specified in this table are the air, bare-hand, and live-line tool distances.~~

~~TABLE 11-MINIMUM APPROACH DISTANCES UNTIL OCTOBER 1, 2018, 242.1 TO 362.0 kV WITH OVERVOLTAGE FACTOR~~

~~T (p.u.)~~	~~Phase-to-ground exposure~~		~~Phase-to-ground exposure~~	
	~~m~~	~~ft~~	~~m~~	~~ft~~
~~2.0~~	~~1.60~~	~~5.25~~	~~2.62~~	~~8.58~~
~~2.1~~	~~1.65~~	~~5.42~~	~~2.69~~	~~8.83~~
~~2.2~~	~~1.75~~	~~5.75~~	~~2.79~~	~~9.17~~
~~2.3~~	~~1.85~~	~~6.08~~	~~2.90~~	~~9.50~~
~~2.4~~	~~1.93~~	~~6.33~~	~~3.02~~	~~9.92~~
~~2.5~~	~~2.03~~	~~6.67~~	~~3.15~~	~~10.33~~
~~2.6~~	~~2.16~~	~~7.08~~	~~3.28~~	~~10.75~~
~~2.7~~	~~2.26~~	~~7.42~~	~~3.40~~	~~11.17~~
~~2.8~~	~~2.36~~	~~7.75~~	~~3.53~~	~~11.58~~

2.9	2.49	8.17	3.68	12.08
3.0	2.59	8.50	3.81	12.50

Note 1: The employer may apply the distance specified in this table only where the employer determines the maximum anticipated per-unit transient overvoltage by engineering analysis. (Table 6 applies otherwise.)

Note 2: The distances specified in this table are the air, bare-hand, and live-line tool distances.

TABLE 12 MINIMUM APPROACH DISTANCES UNTIL OCTOBER 1, 2018, 362.1 TO 552.0 kV WITH OVERVOLTAGE FACTOR

T (p.u.)	Phase-to-ground exposure		Phase-to-ground exposure	
	m	ft	m	ft
1.5	1.83	6.00	2.24	7.33
1.6	1.98	6.50	2.67	8.75
1.7	2.13	7.00	3.10	10.17
1.8	2.31	7.58	3.53	11.58
1.9	2.46	8.08	4.01	13.17
2.0	2.67	8.75	4.52	14.83
2.1	2.84	9.33	4.75	15.58
2.2	3.02	9.92	4.98	16.33
2.3	3.20	10.50	5.23	17.17
2.4	3.43	11.25	5.51	18.08

Note 1: The employer may apply the distance specified in this table only where the employer determines the maximum anticipated per-unit transient overvoltage by engineering analysis. (Table 6 applies otherwise.)

Note 2: The distances specified in this table are the air, bare-hand, and live-line tool distances.

TABLE 13 MINIMUM APPROACH DISTANCES UNTIL OCTOBER 1, 2018, 552.1 TO 800.0 kV WITH OVERVOLTAGE FACTOR

T (p.u.)	Phase-to-ground exposure		Phase-to-ground exposure	
	m	ft	m	ft
1.5	2.95	9.67	3.68	12.08
1.6	3.25	10.67	4.42	14.50
1.7	3.56	11.67	5.23	17.17

~~1.8~~	~~3.86~~	~~12.67~~	~~6.07~~	~~19.92~~
~~1.9~~	~~4.19~~	~~13.75~~	~~6.99~~	~~22.92~~
~~2.0~~	~~4.55~~	~~14.92~~	~~7.92~~	~~26.00~~

~~**Note 1:** The employer may apply the distance specified in this table only where the employer determines the maximum anticipated per-unit transient overvoltage by engineering analysis. (Table 6 applies otherwise.)~~

~~**Note 2:** The distances specified in this table are the air, bare-hand, and live-line tool distances.~~

~~B.~~ *Alternative minimum approach distances*. Employers may use the minimum approach distances in Table ~~14~~6 through Table ~~21~~13 provided that the employer follows the notes to those tables.

TABLE ~~14~~6-AC MINIMUM APPROACH DISTANCES-72.6 TO 121.0 KV

T (p.u.)	Phase-to-ground exposure		Phase-to-~~ground~~phase exposure	
	m	ft	m	ft
1.5	0.67	2.2	0.84	2.8
1.6	0.69	2.3	0.87	2.9
1.7	0.71	2.3	0.90	3.0
1.8	0.74	2.4	0.93	3.1
1.9	0.76	2.5	0.96	3.1
2.0	0.78	2.6	0.99	3.2
2.1	0.81	2.7	1.01	3.3
2.2	0.83	2.7	1.04	3.4

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2.3	0.85	2.8	1.07	3.5
2.4	0.88	2.9	1.10	3.6
2.5	0.90	3.0	1.13	3.7
2.6	0.92	3.0	1.16	3.8
2.7	0.95	3.1	1.19	3.9
2.8	0.97	3.2	1.22	4.0
2.9	0.99	3.2	1.24	4.1
3.0	1.02	3.3	1.27	4.2
3.1	1.04	3.4	1.30	4.3
3.2	1.06	3.5	1.33	4.4
3.3	1.09	3.6	1.36	4.5
3.4	1.11	3.6	1.39	4.6
3.5	1.13	3.7	1.42	4.7

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TABLE ~~15~~7-AC MINIMUM APPROACH DISTANCES-121.1 TO 145.0 KV

T (p.u.)	Phase-to-ground exposure		Phase-to-~~ground~~phase exposure	
	m	ft	m	ft
1.5	0.74	2.4	0.95	3.1
1.6	0.76	2.5	0.98	3.2
1.7	0.79	2.6	1.02	3.3
1.8	0.82	2.7	1.05	3.4
1.9	0.85	2.8	1.08	3.5
2.0	0.88	2.9	1.12	3.7
2.1	0.90	3.0	1.15	3.8
2.2	0.93	3.1	1.19	3.9
2.3	0.96	3.1	1.22	4.0
2.4	0.99	3.2	1.26	4.1
2.5	1.02	3.3	1.29	4.2
2.6	1.04	3.4	1.33	4.4
2.7	1.07	3.5	1.36	4.5

2.8	1.10	3.6	1.39	4.6
2.9	1.13	3.7	1.43	4.7
3.0	1.16	3.8	1.46	4.8
3.1	1.19	3.9	1.50	4.9
3.2	1.21	4.0	1.53	5.0
3.3	1.24	4.1	1.57	5.2
3.4	1.27	4.2	1.60	5.2
3.5	1.30	4.3	1.64	5.4

TABLE ~~16~~8-AC MINIMUM APPROACH DISTANCES-145.1 TO 169.0 KV

T (p.u.)	Phase-to-ground exposure		Phase-to-~~ground~~phase exposure	
	m	ft	m	ft
1.5	0.81	2.7	1.05	3.4
1.6	0.84	2.8	1.09	3.6
1.7	0.87	2.9	1.13	3.7
1.8	0.90	3.0	1.17	3.8
1.9	0.94	3.1	1.21	4.0
2.0	0.97	3.2	1.25	4.1

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2.1	1.00	3.3	1.29	4.2
2.2	1.03	3.4	1.33	4.4
2.3	1.07	3.5	1.37	4.5
2.4	1.10	3.6	1.41	4.6
2.5	1.13	3.7	1.45	4.8
2.6	1.17	3.8	1.49	4.9
2.7	1.20	3.9	1.53	5.0
2.8	1.23	4.0	1.57	5.2
2.9	1.26	4.1	1.61	5.3
3.0	1.30	4.3	1.65	5.4
3.1	1.33	4.4	1.70	5.6
3.2	1.36	4.5	1.76	5.8
3.3	1.39	4.6	1.82	6.0
3.4	1.43	4.7	1.88	6.2
3.5	1.46	4.8	1.94	6.4

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TABLE ~~17~~9-AC MINIMUM APPROACH DISTANCES-169.1 TO 242.0 KV

T (p.u.)	Phase-to-ground exposure		Phase-to-~~ground~~phase exposure	
	m	ft	m	ft
1.5	1.02	3.3	1.37	4.5
1.6	1.06	3.5	1.43	4.7
1.7	1.11	3.6	1.48	4.9
1.8	1.16	3.8	1.54	5.1
1.9	1.21	4.0	1.60	5.2
2.0	1.25	4.1	1.66	5.4
2.1	1.30	4.3	1.73	5.7
2.2	1.35	4.4	1.81	5.9
2.3	1.39	4.6	1.90	6.2
2.4	1.44	4.7	1.99	6.5
2.5	1.49	4.9	2.08	6.8
2.6	1.53	5.0	2.17	7.1
2.7	1.58	5.2	2.26	7.4
2.8	1.63	5.3	2.36	7.7

2.9	1.67	5.5	2.45	8.0
3.0	1.72	5.6	2.55	8.4
3.1	1.77	5.8	2.65	8.7
3.2	1.81	5.9	2.76	9.1
3.3	1.88	6.2	2.86	9.4
3.4	1.95	6.4	2.97	9.7
3.5	2.01	6.6	3.08	10.1

TABLE ~~18~~10-AC MINIMUM APPROACH DISTANCES-242.1 TO 362.0 KV

T (p.u.)	Phase-to-ground exposure		Phase-to-~~ground~~phase exposure	
	m	ft	m	ft
1.5	1.37	4.5	1.99	6.5
1.6	1.44	4.7	2.13	7.0
1.7	1.51	5.0	2.27	7.4
1.8	1.58	5.2	2.41	7.9
1.9	1.65	5.4	2.56	8.4
2.0	1.72	5.6	2.71	8.9
2.1	1.79	5.9	2.87	9.4

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2.2	1.87	6.1	3.03	9.9
2.3	1.97	6.5	3.20	10.5
2.4	2.08	6.8	3.37	11.1
2.5	2.19	7.2	3.55	11.6
2.6	2.29	7.5	3.73	12.2
2.7	2.41	7.9	3.91	12.8
2.8	2.52	8.3	4.10	13.5
2.9	2.64	8.7	4.29	14.1
3.0	2.76	9.1	4.49	14.7
3.1	2.88	9.4	4.69	15.4
3.2	3.01	9.9	4.90	16.1
3.3	3.14	10.3	5.11	16.8
3.4	3.27	10.7	5.32	17.5
3.5	3.41	11.2	5.52	18.1

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TABLE ~~19~~11-AC MINIMUM APPROACH DISTANCES-362.1 TO 420.0 KV

T (p.u.)	Phase-to-ground exposure		Phase-to-~~ground~~phase exposure	
	m	ft	m	ft
1.5	1.53	5.0	2.40	7.9
1.6	1.62	5.3	2.58	8.5
1.7	1.70	5.6	2.75	9.0
1.8	1.78	5.8	2.94	9.6
1.9	1.88	6.2	3.13	10.3
2.0	1.99	6.5	3.33	10.9
2.1	2.12	7.0	3.53	11.6
2.2	2.24	7.3	3.74	12.3
2.3	2.37	7.8	3.95	13.0
2.4	2.50	8.2	4.17	13.7
2.5	2.64	8.7	4.40	14.4
2.6	2.78	9.1	4.63	15.2
2.7	2.93	9.6	4.87	16.0
2.8	3.07	10.1	5.11	16.8

2.9	3.23	10.6	5.36	17.6
3.0	3.38	11.1	5.59	18.3
3.1	3.55	11.6	5.82	19.1
3.2	3.72	12.2	6.07	19.9
3.3	3.89	12.8	6.31	20.7
3.4	4.07	13.4	6.56	21.5
3.5	4.25	13.9	6.81	22.3

TABLE ~~20~~12-AC MINIMUM APPROACH DISTANCES-420.1 TO 550.0 KV

T (p.u.)	Phase-to-ground exposure		Phase-to-~~ground~~phase exposure	
	m	ft	m	ft
1.5	1.95	6.4	3.46	11.4
1.6	2.11	6.9	3.73	12.2
1.7	2.28	7.5	4.02	13.2
1.8	2.45	8.0	4.31	14.1
1.9	2.62	8.6	4.61	15.1
2.0	2.81	9.2	4.92	16.1
2.1	3.00	9.8	5.25	17.2

2.2	3.20	10.5	5.55	18.2
2.3	3.40	11.2	5.86	19.2
2.4	3.62	11.9	6.18	20.3
2.5	3.84	12.6	6.50	21.3
2.6	4.07	13.4	6.83	22.4
2.7	4.31	14.1	7.18	23.6
2.8	4.56	15.0	7.52	24.7
2.9	4.81	15.8	7.88	25.9
3.0	5.07	16.6	8.24	27.0

TABLE ~~21~~13-AC MINIMUM APPROACH DISTANCES-550.1 TO 800.0 KV

T (p.u.)	Phase-to-ground exposure		Phase-to-~~ground~~phase exposure	
	m	ft	m	ft
1.5	3.16	10.4	5.97	19.6
1.6	3.46	11.4	6.43	21.1
1.7	3.78	12.4	6.92	22.7
1.8	4.12	13.5	7.42	24.3
1.9	4.47	14.7	7.93	26.0

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2.0	4.83	15.8	8.47	27.8
2.1	5.21	17.1	9.02	29.6
2.2	5.61	18.4	9.58	31.4
2.3	6.02	19.8	10.16	33.3
2.4	6.44	21.1	10.76	35.3
2.5	6.88	22.6	11.38	37.3

Notes to Table ~~14~~6 through Table ~~21~~13:

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NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.